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## Systems Thinking (in Practice) Beyond Text Book Systems Thinking

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Applied  
Systems  
Thinking in  
Practice Group



The Open University

# Systems Thinking (in Practice)

...Beyond text book systems thinking

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Guest lecture

**Date: 26 October 2020**

# Beyond a textbook

...on systems thinking (in practice)



**Chapter 1: Introducing Systems Approaches** Martin Reynolds and Sue Holwell

**Chapter 2: System Dynamics** John Moorecroft

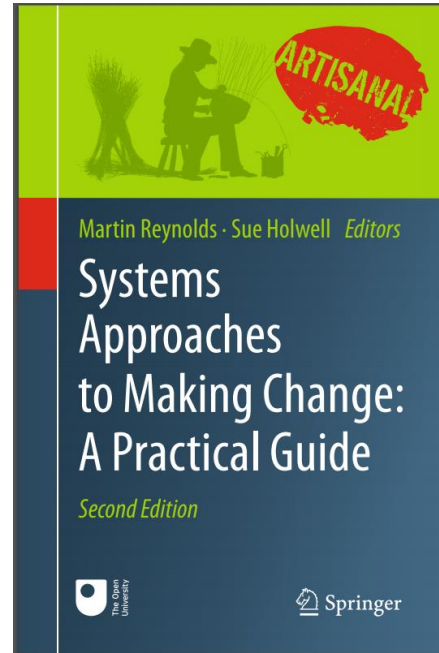
**Chapter 3: The Viable System Method** Patrick Hoverstadt

**Chapter 4: Strategic Options Development and Analysis** Fran Ackermann and Colin Eden

**Chapter 5: Soft Systems Methodology** Peter Checkland and John Poulter

**Chapter 6: Critical Systems Heuristics: The Idea and Practice of Boundary Critique** Werner Ulrich and Martin Reynolds

**Chapter 7: Epilogue: Systems Approaches and Systems Practice** Martin Reynolds and Sue Holwell



## Outline of session

1. New normal... Systems thinking practitioners (STPs)?
2. 3 waves of systems thinking
3. 4<sup>th</sup> wave of systems thinking?
4. Portrait of a systems thinking practitioner (STP)

Reynolds, M and Holwell, S eds. (2020 [2010]). *Systems approaches to making change: a practical guide* 2nd edition London: Open University and Springer.

# Need for a new normal?...



- Climate emergency
- Economic recession
- Black lives matter
- Pandemics
- Refugee crisis
- Terrorism
- Populism
- Crises of legitimacy
- Etc.

# Hopeful new normal 2020? ... exciting initiative in UK



2017 the UN, the WHO and OECD ...all called for the use of **systems thinking** to deal with highly complex problems.

2019-2020 the UK formally recognised the importance of **systems thinking practitioner**



Institute for Apprenticeships  
& Technical Education

About

Ensuring quality

T Levels

Developing apprenticeship standards

Apprenticeship standards

Home › Search the Apprenticeship Standards › Systems thinking practitioner

## SYSTEMS THINKING PRACTITIONER



This apprenticeship standard is in development and is not yet ready to use

### Why is this apprenticeship not ready for delivery?

An apprenticeship standard is only available for delivery when both the standard and assessment plan is approved and a funding band (core government contribution) has been assigned to the standard.

### How can I get involved?

If you'd like to get involved and contribute to the development of this standard, please read about [developing standards and assessment plans](#). You can email the trailblazer contact using the details on this page.

Status: In development

- ☒ Proposal approved
- ☒ Standard approved
- ☐ Assessment plan approved

Level: **7**

Degree: TBC

Reference: ST0787

Version: 1

Date updated: 01/08/2019

Route: Business and administration



# New normal 2020?



...systems thinking practitioner (STP) occupational role

## STP Apprenticeship (STP-A) summary

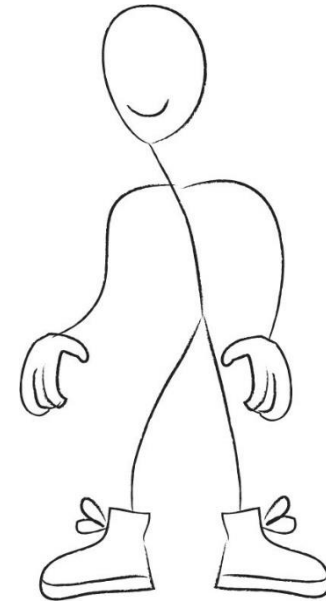
- This occupation is found in **arenas** where complex problems exist that cannot be addressed by any one organisation or person, but which require cross-boundary collaboration within and between organisations.
- Examples of likely **Systems Thinking Practitioner (STP) employers** include: central and local government, multilaterals, defence, education and innovation/ research, and the health service; globalised corporations with complex supply chain and partner relationships; international banks and financial services; NGOs and social enterprises addressing social challenges; consultancy service providers working with any of the above.
- The **broad purpose** of the occupation is to support decision-makers in strategic and leadership roles to understand and address complex and sometimes even 'wicked' problems through provision of expert systemic analysis, advice and facilitation.

# 3 waves of systems thinking

## ...snapshot (textbook) history of systems traditions



1. **Hard systems thinking**..... 1950s (focus on interrelationships and dynamics)  
**Jay Forrester** and **Donella Meadows**
2. **Soft systems thinking**.....1970s (focus on perspectives and contrast)  
**Peter Checkland** and **Russel Ackoff**
3. **Critical systems thinking**...1980s (focus on boundary judgements and conflict):
  - a) Boundary critique and multimethodology  
**Mike Jackson** and **Gerald Midgley**
  - b) Boundary critique and complementarism  
**Werner Ulrich** and **Martin Reynolds**



The future systems  
thinking practitioner (STP)

# 4<sup>th</sup> wave of systems thinking?

## ...challenges for a systems thinking practitioner (STP)



### Two challenges

1. Too complicated... many 'methods' & difficulty to explain to practitioners
2. Too abstract... alienating from practitioner lifeworld and experiences



### Two responses to the challenges

1. DRSP (distinctions, relationships, systems, perspectives)..Derek Cabrera and Gerald Midgley, with Raghav Rajagopalan (immersive systemic knowing)
2. STiP heuristic: .... Reynolds with Open University team



# Systems thinking in practice (STiP)

Keep it simple...STiP heuristic **x3 entities**

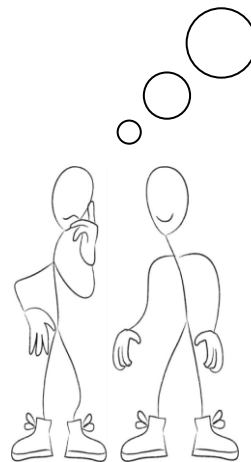


## 3. Tools or 'ideas' (as agency for change)

Conceptual *Ideas* including 'systems' of interest as tools for making change

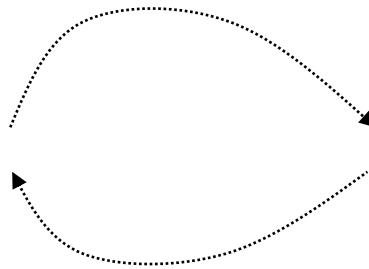
## 2. People or practitioners (change agents)

or stakeholders  
...responsible for  
making change



## 1. Real world wicked problems (Situations of change and uncertainty)

realities of complicatedness,  
complexity, and conflict in  
situations



# Systems thinking in practice (STiP)

...STiP heuristic **x3 entities** and **x3 activities**



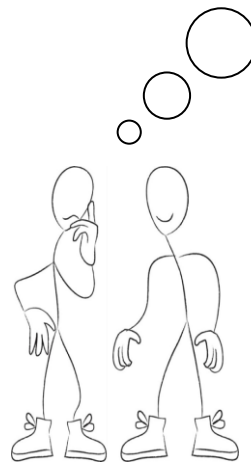
## 3. Tools or 'ideas' (as agency for change)

Conceptual *Ideas* including 'systems' of interest as tools for making change

(iii) *Reflecting on boundary judgements (rBJ) of inter-relationships and perspectives*

## 2. People or practitioners (change agents)

or stakeholders  
...responsible for making change



(ii) *Engaging with multiple perspectives (eMP)*

(ii) *Understanding inter-relationships (uIR)*

## 1. Real world wicked problems (Situations of change and uncertainty)

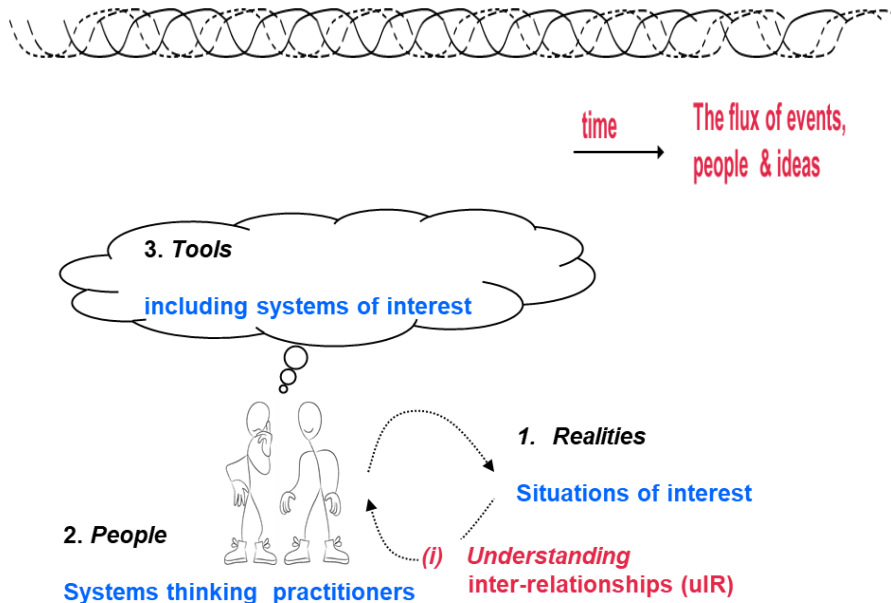
realities of complicatedness, complexity, and conflict in situations

# (i) understanding interrelationships

## ...STiP heuristic for gaining bigger picture



...Recovering systemic sensibilities  
(everything connects)



Reality comprises:

1. Complicatedness of events (interconnected)
2. Complexity of people (with different viewpoints)
3. Conflict of ideas (contrasting perspectives on events & viewpoints)

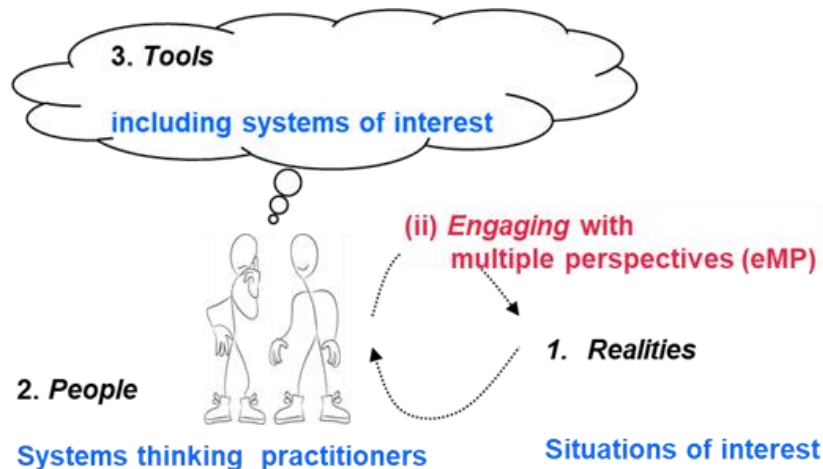
- **Nothing** in reality is objectively 'simple'.
- The overall purpose of Systems thinking is to simplify (render/recreate) reality for wider purpose of improving reality.

## (ii) Engaging multiple perspectives ...STiP heuristic for joined-up-conversations

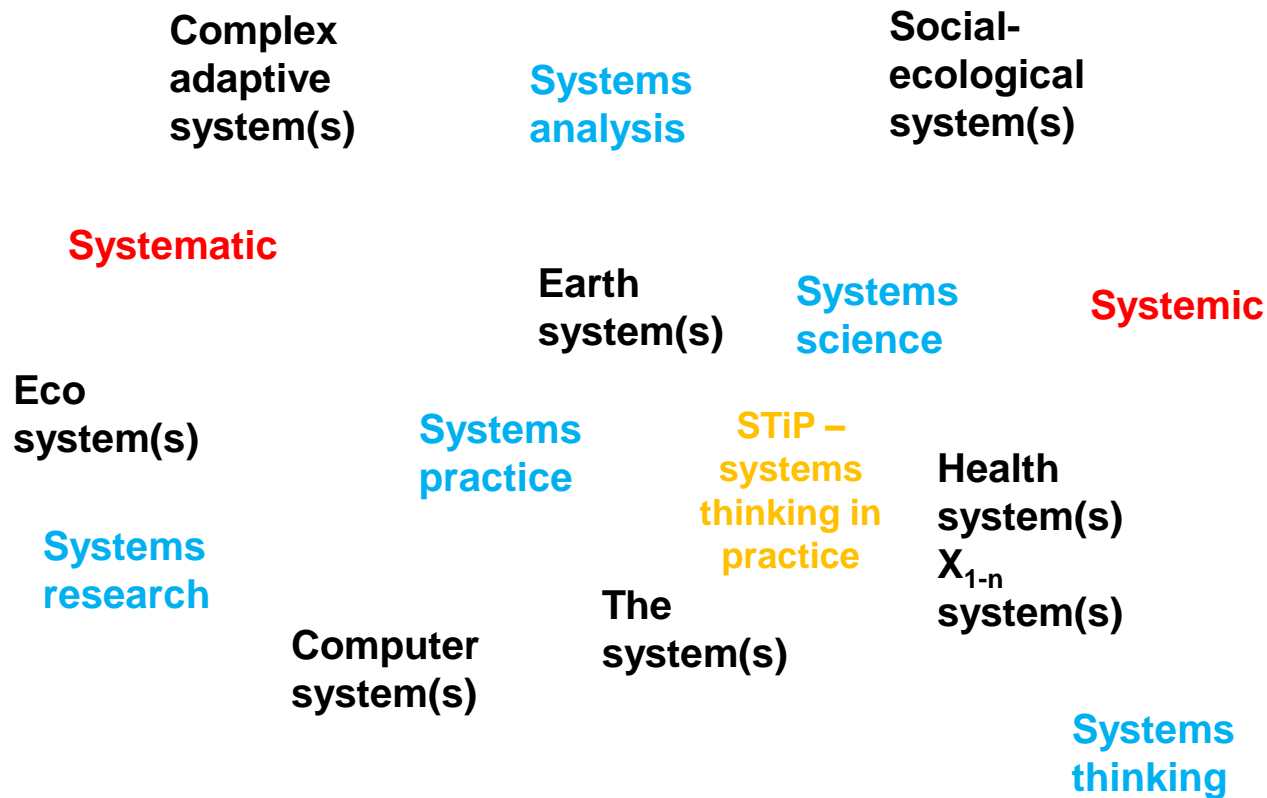


...Deepening systems literacy  
(avoiding conversing at cross purposes)

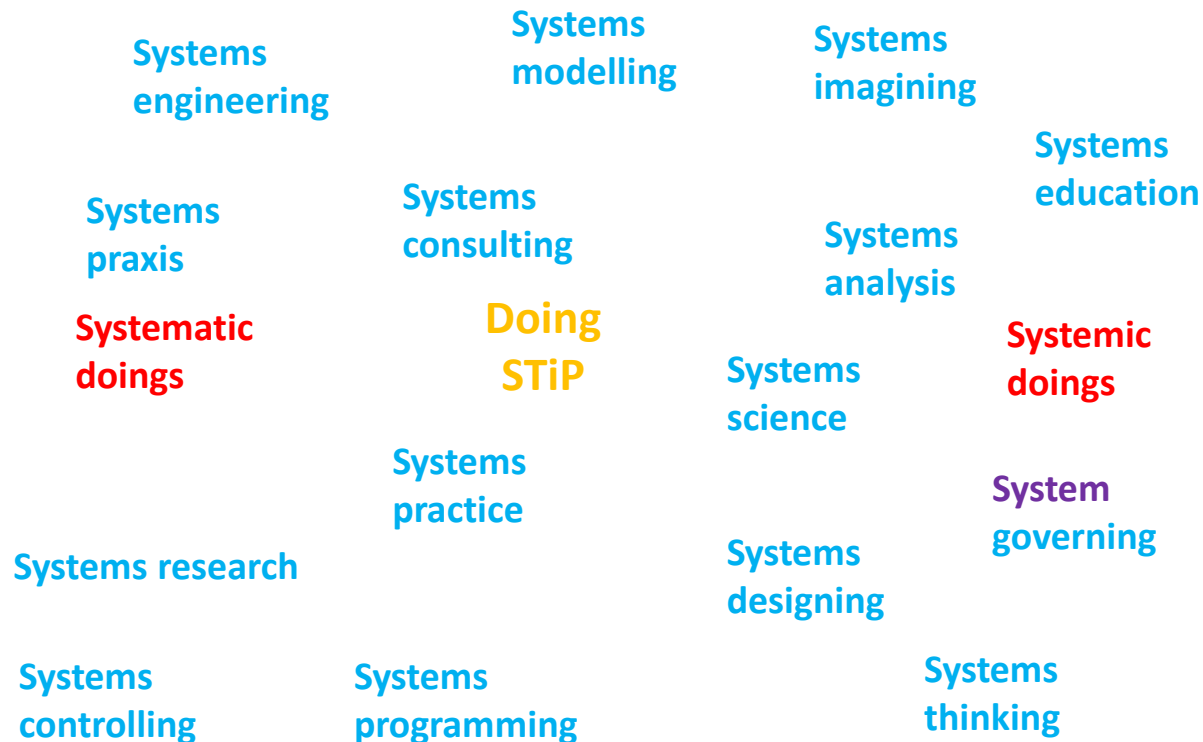
1. Feral nature of 'systems' idea...
2. X3 types of 'system'...
3. Engineered vs purposeful systems thinking...



Residual thinking (in practice): The word 'system' has 'gone feral' – until STiP there has been a failure to institutionalise narratives, conceptions, praxis except as 'things' e.g. ecosystems ?



Relational thinking in practice: What happens when we think about the ways and domains of *doing Systems* (i.e., take a practitioner perspective)?



*... all knowing is doing*



# Systems: 3 types?



The diagram consists of a light blue oval on the left containing the text 'Types of System'. An arrow points from the right side of this oval to a large light blue rectangle on the right. Inside this rectangle, there is a list of three types of systems, each with an example sentence below it. At the bottom of the rectangle is the text 'Human design systems'.

## Types of 'System'

### 1. Natural

*organisms, ecosystems, solar system, planet Earth...*

### 2. Mechanical ('purposive'...ascribed fixed purposes)

*'machines, cars, software, irrigation, central heating...*

### 3. Social ('purposeful'...variable purposes subject to change)

*healthcare, education, finance, economy, family, community...*

**Human design systems**

# Systems thinking in practice

## ... making choices

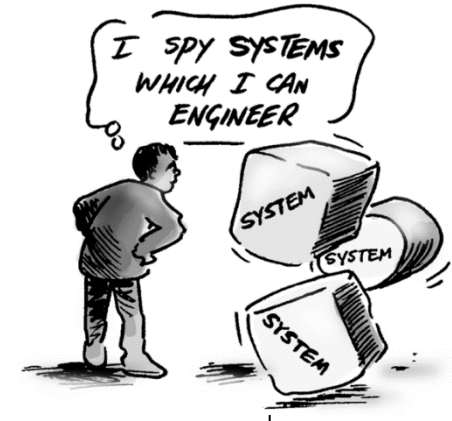


Choice of two  
devices for  
thinking about  
systems

1. Ontological device: *systems* to be engineered

'the' health system  
'the' legal system  
'the' education system

*(purposive analysis of) 'the' social system*



2. Epistemological device: *situations* to be explored using systems as a learning device

*purposeful social systems design*

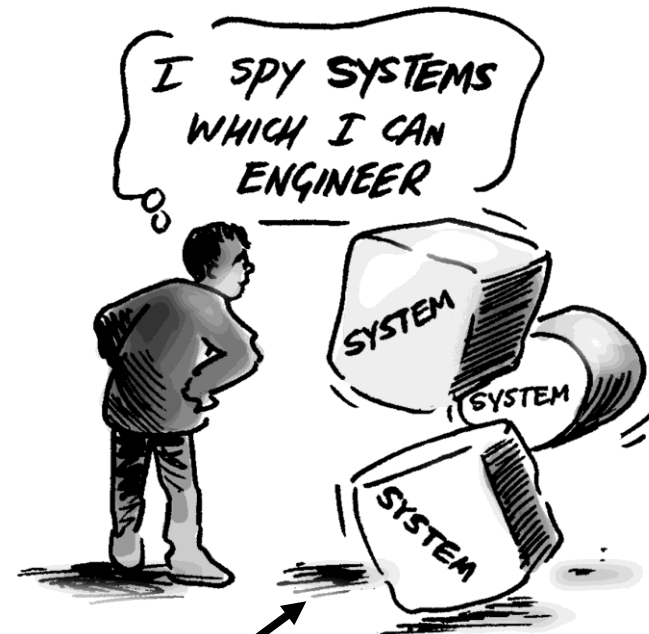


# How to start? with Situation? or System?

...a choice to be made



Systemic  
(epistemologies)



Systematic  
(ontologies)

\*garden mind vs machine mind (Sue Goss, 2020 pandemic management); garden brain vs machine brain (Kate Raworth, 2013 doughnut economics); parenting: Do you take a role as 'gardener' or 'carpenter' - parent thinks that a child can be molded (Alison Gopnik, 2018)

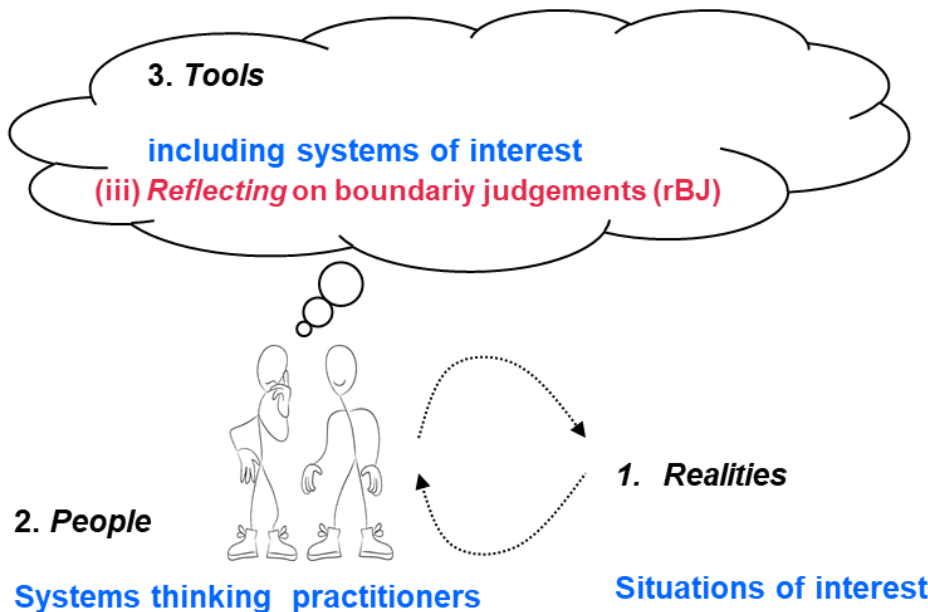
# (iii) Reflecting on boundary judgements

## ...STiP heuristic for practising STiP

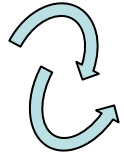


...Developing systems thinking in practice capabilities

(Increasing freedom to make informed choices)



1. STiP (systems thinking in practice) as **bricolage**... less bounded (systemic) thinking *with* more bounded (systematic) practice
2. STP (systems thinking practitioner) as **bricoleur**... situated practitioner



# STiP praxis as 'bricolage'

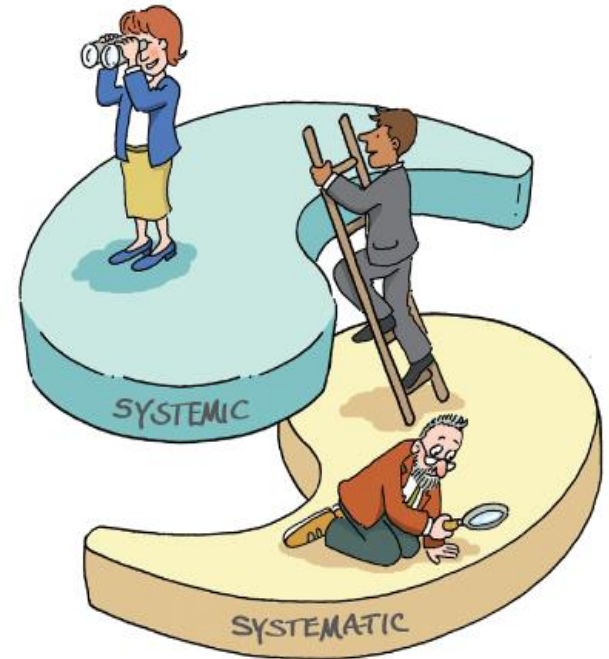
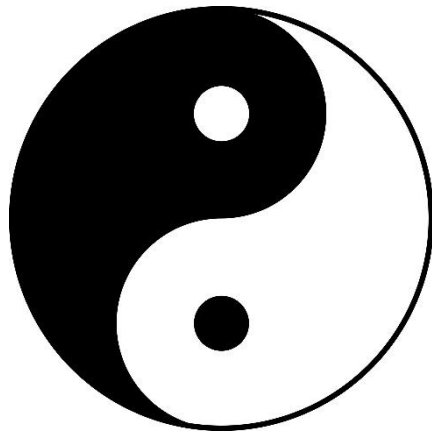


...conversation between systemic and systematic

Systems thinking in practice (STiP) combines Systemic and Systematic praxis

Transformational change requires thinking and practice; that is *systemic* + *systematic*

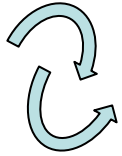
Together these constitute a response of bricolage (a DUALITY not a DUALISM)



**Systems thinking practitioner = yin-yang**

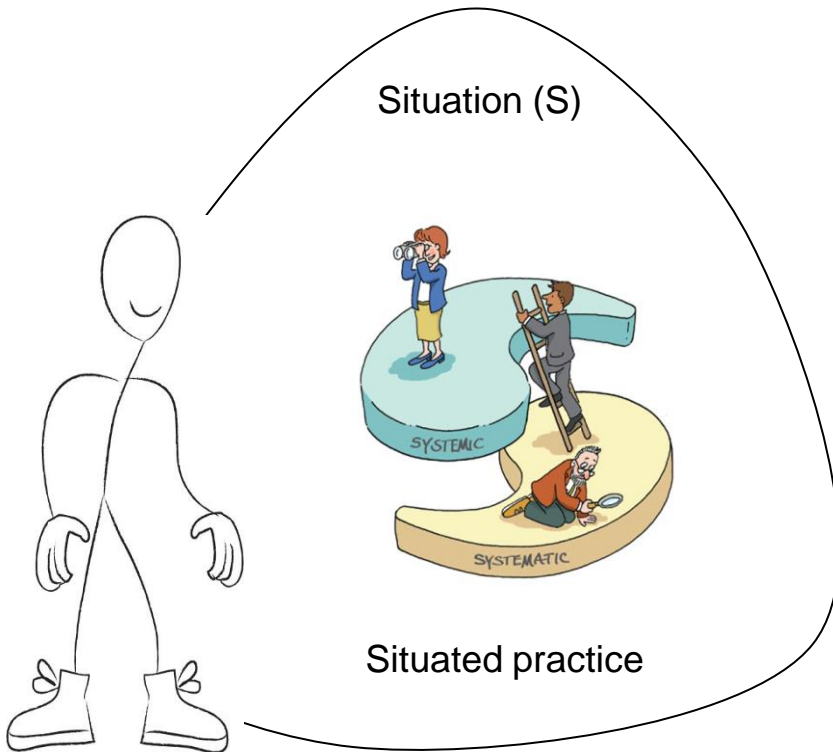
**Yin and yang can be thought of as complementary (rather than opposing) forces that interact to form a dynamic in which the whole is greater than the assembled parts**

**Systems thinking is both systemic (being holistic) *and* systematic (...remaining grounded)**



# STP as 'bricoleur'

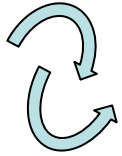
...situated systems thinking practitioner



All practice (doing) is  
situated and embodied

1. All knowing is doing ...not dualism between thinking and practice but duality of thinking in practice
2. All being, knowing and doing is relational
3. All observers, practitioners, actors have a history, a tradition of understanding, out of which they think and act
4. Bricoleurs as situated practitioners are travelling craftspeople in 18<sup>th</sup> Century rural France (Claude Lévi-Strauss)





# Aptitudes of the STP bricoleur ...situated systems thinking practitioner



## Core chapters

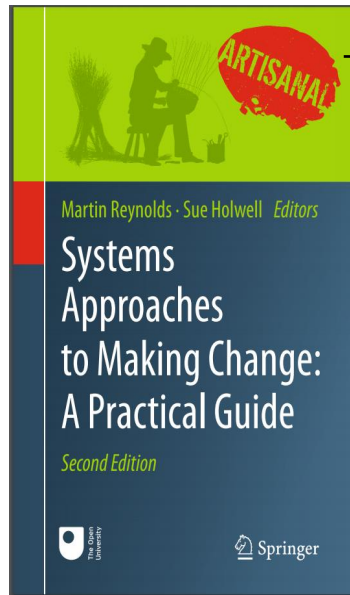
Ch. 2: **System dynamics**

Ch. 3: **The Viable System Model**

Ch. 4: Strategic Options Development and Analysis (**cognitive mapping**)

Ch. 5: **Soft Systems Methodology**

Ch. 6: **Critical Systems Heuristics**



1. STiP (bricolage) is artisanal craft rather than a science
2. Artisanal in *reusing* artifacts that are readily available in a particular situation, including past and local expertise
3. STPs draw on their own repertoire of expertise and experiences to complement rather than replace tools from systems thinking approaches
4. Improvisation and experimentation are key aptitudes, alongside humility, empathy and acknowledge fallibility

All practice (doing) is situated and embodied

Ray Ison rule of thumb: whenever the word system is used then a verb (STiP) and its user (STP) is also evoked

# Applied systems thinking in practice (ASTiP) group ...at the Open University



ASTiP = research group of STPs School of Engineering and Innovation

x3 action research projects involving alumni from  
OU STiP programme:



Systems thinking practitioner  
(STPs)

- Systemic sensibilities
- Systems thinking literacy
- STiP capabilities

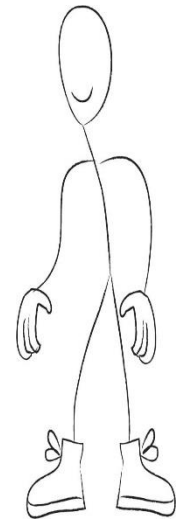
1. (2014) **Post-study application of STiP in workplace**
2. (2016) **Competency framing of STiP**
3. (2018 to present) **Capabilities approach to higher education (x3 threads)**
  - STiP capabilities for PG curriculum praxis (global)
  - **STP Apprenticeship** (national)
  - revision of STiP curriculum for 2020 (OU)

# Systems thinking in practice (STiP) ...at the Open University



STiP = namesake of OU postgraduate programme that began in 2010

1. (2020) launch of 2<sup>nd</sup> edition of PG STiP programme x2 modules
  - [Making strategy with STiP \(TB871\)](#)
  - [Managing Change with STiP \(TB872\)](#)
2. (2020) 2<sup>nd</sup> edition of two publications – Systems Approaches, and Systems Thinkers
3. (2021) launch of the OU Systems thinking practitioner Apprenticeship as part of STiP curriculum



Systems thinking practitioner  
(STPs)

- Systemic sensibilities
- Systems thinking literacy
- STiP capabilities

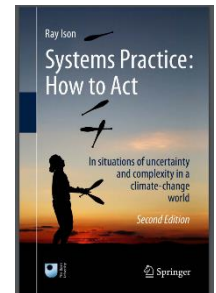
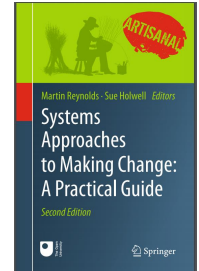
(2021) 50 year anniversary of first Systems module in OU/UK.

# Beyond the STiP text books ...list of resources



[Systems thinking resources](#) freely available online from the Open University including:

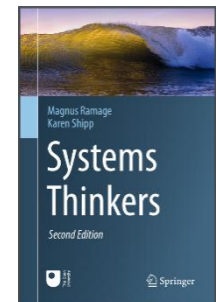
1. Badged Open Course: [Mastering Systems Thinking in Practice](#) introduces systems thinking in practice at postgraduate level
2. Diagramming tutorials
3. Short introductory material on Systems thinking
4. Sample course material from Postgraduate modules on Systems Thinking in Practice
5. YouTube videos
6. Chapters from core readers associated with STiP programme:



[Chapter 1: Introducing Systems Approaches](#) Martin Reynolds and Sue Holwell

[Chapter 6: Critical Systems Heuristics:](#) Werner Ulrich and Martin Reynolds

[Chapter 7: Epilogue: Systems Approaches and Systems Practice](#) Martin Reynolds and Sue Holwell



Introduction and sample chapter from third supplement Reader: Ramage, M. and Shipp, K. (2020 [2020]) [Systems Thinkers](#), 2<sup>nd</sup> edn. London, Springer